

L 16059-65

ACCESSION NR: AP4046177

The Schiff bases were obtained from the phenylethylamine and the substituted (5-chloro, 5-bromo, 5-nitro) salicyl aldehyde in methanol, the chelates with the corresponding metal acetate. Preparation is described, yields and characteristics tabulated; rotational dispersion curves of the chelates in the 650-450 m range and absorption spectra are figured. The rotational dispersion curves of the Schiff bases were in the positive range and had the usual form. Introduction of nickel and cobalt into the Schiff base did not change this curve while the Schiff base with copper gave an abnormal rotational dispersion curve, first negative, then positive and again negative. The presence of substitutions (Cl, Br, NO₂, OCH₃) at the aldehyde component had no significant influence on the rotational dispersion of Schiff bases or chelates. Orig. art. has: 3 formulas, 4 figures and 5 tables

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Moscow State University)

SUBMITTED: 31May63

ENCL: 00

SUB CODE: GC, MT

NO REF SOV: 002

OTHER: 002

Card 3/3

L 151-65 EWT(m)/EWP(j) Pa-4 ESD(gs)/RAEM(a)/ESD-3 RM

ACCESSION NR: AP4046178

S/0079/64/034/009/3025/3028

AUTHORS: Terent'yev, A.P.; Rukhadze, Ye.G.; Panova, G.V.; Viktorova, N.M.

TITLE: Chelates with optically active ligands. III. Bis-(o-oxyacetophenone)-(-)-propylenediimine and its chelates with copper, nickel and cobalt (+2)

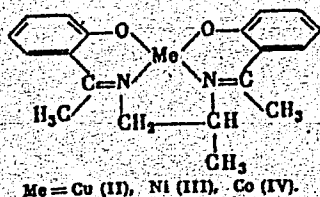
SOURCE: Zhurnal obshchey khimii, v. 34, no. 9, 1964, 3025-3028

TOPIC TAGS: chelate, optically active ligand, ligand, copper chelate, nickel chelate, cobalt chelate, asymmetrical center, rotational dispersion, spectral absorption, Schiff base, substitution

ABSTRACT: The earlier observed lack of influence of substitutions (Cl, Br, NO₂, OCH₃) at the aldehyde component upon optical rotation may be explained by their great distance from the asymmetrical center. In the title compositions these substitutions were brought closer to the center of asymmetry. The o-oxyacetophenone was reacted with laevorotatory propylenediamine to obtain the title product (I) and the chelates (II, III, IV) as in the following schema

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L 15151-65
ACCESSION NR: AP4046178



and their rotational dispersion and spectral absorption were determined. The rotational dispersion was tested in dimethylformamide. For comparison, the chelates obtained in report I (with salicyl aldehyde) were also tested in the same medium; the solvent did not influence optical rotation significantly. The rotational dispersion curves in the negative range of compound (I) and the earlier prepared Schiff bases did not differ significantly; substitution of the hydrogen of the aldehyde group by CH_3 had no influence on optical rotation. However, those of the chelates were in the positive range, and the curve outline differed considerably. This may be related to the position of CH_3 close to the center. Spectral absorption curves were almost the same as with the earlier compounds. Orig. art. has: 4 figures and 2 formulas.

Card 2/3

1 15151-65
ACCESSION NR: AP4046178

ASSOCIATION: None

SUBMITTED: 04Jul64

ENCL: 00

SUB CODE: GC, MT

NR REF SOV: 003

OTHER: 001

Card 3/3

ACCESSION NR: A74044385

S/0195/64/005/004/001

AUTHOR: Akopdzhanov, R. G.; Vaynshteyn, E. Ye.; Keyer, N. P.; Kefeli, L. M.; Rukhadze, Ye. G.

TITLE: X-ray K-absorption spectra of copper in some catalytic chelate polymers

SOURCE: Kinetika i kataliz, v. 5, no. 4, 1964, 616-623

TOPIC TAGS: copper, K-absorption spectrum, chelate, sodium bis-dithiocarbamate, chelate polymer, copper chelate polymer, catalysis, X-ray analysis

ABSTRACT: Polychelates of copper synthesized from sodium bis-dithiocarbamates containing a Cu(SS) chelate unit were investigated by X-ray spectral analysis. The optimal conditions for the study of the fine structure of the principal K-region absorption of copper in polychelates are obtained by working with absorbents having a density of 3.5-5 mg/cm²; for the study of the fluctuation in an ultra fine structure this should be 10 mg/cm². The data on the K-region absorption of metallic copper obtained in these experiments were in good agreement with the spectrum registered by a double-crystal spectrometer. The reproducibility of data in three parallel experiments (the points lay on a single curve) for polychelates with two different radicals R₅=(C₆H₄)₂ and R₃=(CH₂)₆ was also plotted. When the structure of the X-ray absorption spectrum of a Cu²⁺ ion in aqueous solution was compared with that of copper in some oxygen- and sulfur-containing inorganic compounds (CuS, Cu₂O),

Card 1/3
Card

the general form of the long-wave structure of the spectrum was found to be essentially independent of the change in the ionic charge. It depended rather on the nature of the bond of the electrons in the absorbing atom and the atoms in its close vicinity in the metal or its compounds, especially on the participation in this bond of the electrons with p-symmetry. Upon transition from the spectrum of the metal to that of the oxide, there is a regular shift (~ 1.5 e.v.) of the spectrum toward the short-wave side. It can be assumed that the valence of copper in the polymers studied is close to unity. Analysis of the long-wave fine structure of the X-ray K-spectra of copper in polychelates in comparison with the spectrum of the metal revealed a change in the valence of copper atoms in polychelates depending on the organic radical in the polymer chain. This change can be due to a change in the degree of overlapping of the sp-functions of electrons producing the bond between the copper atom in the chelate and additives, such as sulfur atoms. In polychelates containing R_4 and R_5 aromatic radicals in the polymer chain, the absorption spectra show a decrease in intensity in the initial and medium regions, as compared to those of metal. In the spectra of polymers containing R_2 and R_3 organic aliphatic radicals, the intensity of absorption is increased in these regions. The difference in the effect of aromatic and aliphatic radicals in the polymer chain on the nature of the reaction of copper with the additives in polychelates is also revealed by the change in the catalytic activity of these polychelates. "The authors thank V. I. Petrosyan for supplying the copper foil."

Card

ACCESSION NR: AP4044386

Orig. art. has: 8 figures and 1 chemical structure.

ASSOCIATION: Institut kataliza SO AN SSSR (Institute of Catalysis, SO AN SSSR);
Institut neorganicheskoy khimii SO AN SSSR (Institute of Inorganic Chemistry, SO
AN SSSR)

SUBMITTED: 16Oct63

ENCL: 00

SUB CODE: OC, OP

NO REF SOV: 017

OTHER: 002

Card

3/3

ACCESSION NR: AP4040960

S/0020/64/156/005/1174/1177

AUTHOR: Terent'yev, A. P.; Panova, G. V.; Shigorin, D. N.; Rukhadze, Ye. G.

TITLE: EPR spectra of optically-active chelate compounds of copper with oxyaldimines and oxyketimines

SOURCE: AN SSSR. Doklady*, v. 156, no. 5, 1964, 1174-1177

TOPIC TAGS: EPR, EPR spectrum, chelate compound, optically-active chelate compound, copper, copper compound, copper chelate compound, aldimine compound, ketimine compound, copper-oxyaldimine compound, copper-oxyketimine compound

ABSTRACT: It is a well-known fact that the degree of delocalization of an unpaired electron can be studied directly by the electron paramagnetic resonance method. Hence, one and the same structural peculiarities of molecules can be found in the optical activity and EPR spectra. With this in mind, the authors studied the EPR spectra of the titled chelate compounds of copper. The analysis was carried out on a superheterodyne EPR spectrometer with a frequency of 9455 mc. All of the compounds in a chloroform solution produce EPR spectra which are characterized by four lines of a superfine structure, which originate as the result of the interaction of the copper atom's nuclear moment ($I_{Cu} = 3/2$) with the

Card 1/4

ACCESSION NR: AP4040960

magnetic spire moment of the unpaired electron. An additional superfine structure composed of five lines manifested itself in the EPR spectra for compounds II, IV and V of the Figure of Enclosure 01. The possibility of disrupting the molecular coplanarity is the greatest with these compounds. The additional superfine structure did not appear in the EPR spectra for compounds I and III. The assumption could be made that this is associated with the ability of chelates I and III, as the more coplanar, to form associates. Actually, the formation of associates could lead to the elimination of the additional superfine structure owing to the origination of a dipole spin-spin interaction. The presence of the additional hyperfine structure in the II, IV and V compounds and its absence in the I and III compounds can only be explained by the peculiarities of the molecular structure, especially by the intensive disruption of their coplanarity through the introduction of the CH_3 group instead of the aldehyde group's hydrogen atom. Disruption of the coplanarity produces an essential influence on the distribution of the electron density of the unpaired electron in the molecule. Authors conclude that one and the same structural peculiarities of the investigated copper chelate compounds, associated with disruption of the molecular coplanarity under the effects of steric factors produce a change in the compound's optical activity and EPR spectra. "Authors thank N. V. Vereyna and N. A. Begunova for their help in conducting the experiment." Orig. art. has:

3 figures.

Card 2/4

ACCESSION NR: AP4040960

SUBMITTED: 17Mar64

ENCL: 01

SUB CODE: OP, IC

NO REF SOV: 007

OTHER: 002

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical
Institute); Moskovskiy Gosudarstvennyy im. M. V. Lomonosova (Moscow State University)
universitet

Card 3/4

ACCESSION NR: AP4042188

S/0190/64/006/007/1267/1271

AUTHOR: Terent'yev, A. P.; Mochalina, I. G.; Rukhadze, Ye. G.;
Povolotskaya, Ye. M.

TITLE: Study in the series of polymeric chelates. X. Some
physicochemical studies of polymeric chelates based on thio amide
and poly(thio amide) derivatives of pyridine

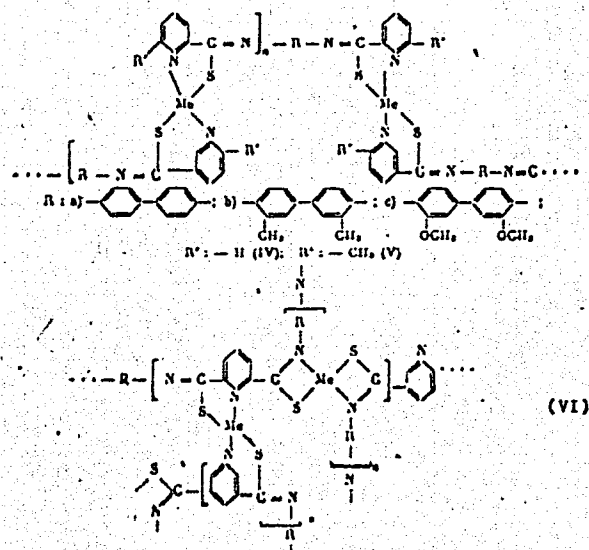
SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 7, 1964,
1267-1271

TOPIC TAGS: polymeric chelate, thiamide pyridine derivative,
polythiamide pyridine derivative, Cu, Ni, Co, Zn, polymeric chelate
property, chelate group structure

ABSTRACT: The properties of the following Cu-, Ni-, Co-, or Zn-
containing polymeric chelates have been studied.

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ACCESSION NR: AP4042188



(VI)

Card 2/4

ACCESSION NR: AP4042188

The polymers are fine, colored amorphous powders which are soluble only with difficulty. They dissolve most readily in dimethylformamide, chloroform, and benzene; the best solubility is exhibited by polymers with methoxy groups in the backbone. The polymers are attacked by acids but are resistant to alkalis. They lose 5—15% of their weight on heating to 200C and 20—80% on heating to 400C. Comparative studies showed that polymers with a higher solubility have a lower chemical and thermal stability. The density of polymeric chelates varies from 1.27 to 1.60. They are dielectrics at room temperature; at 383K the highest electrical conductivity (10^{-10} to $10^{-11} \text{ ohm}^{-1} \text{ cm}^{-1}$) is exhibited by Cu-containing polymers. Catalytic properties are inherent only in Cu-, Ni-, and Co-containing polymers. Their catalytic activity surpasses by two orders of magnitude that of inorganic Cu semiconductors. The nature of the band in the chelate group, as determined from x-ray absorption spectra, is -C-S-Me . Orig. art. has: 3 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im M. V. Lomonosova (Moscow State University)

Card 3/4

ACCESSION NR: AP4042188

SUBMITTED: 02Aug63

ATD PRESS: 3073

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 006

OTHER: 002

Card 4/4

TERENT'YEV, A.P.; PANOVA, G.V.; SHIGORIN, D.N.; RUKHADZE, Ye.G.

Electron paramagnetic resonance spectra of optically active
chelate compounds of copper with oxyaldimines and oxyketimines.
Dokl. AN SSSR 156 no. 5:1174-1177 Je '64. (MIRA 17:6)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova i Moskovskiy
gosudarstvennyy universitat im. M.V.Lomonosova. 2. Chlen-
korrespondent AN SSSR (for Terent'yev).

ACCESSION NR: AP4030786

S/0020/64/155/004/0872/0873

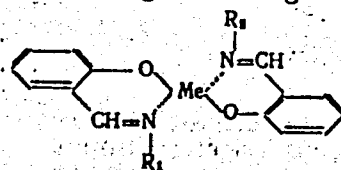
AUTHOR: Terent'yev, A. P. (Corresponding member AN SSSR); Rukhadze, Ye. G.; Panova, G. V.

TITLE: Tetra-coordinated chelates with unevenly paired ligands

SOURCE: AN SSSR. Doklady*, v. 155, no. 4, 1964, 872-873

TOPIC TAGS: chelate, evenly paired ligand, unevenly paired ligand, salicylal phenylethylimine, polarimetric titration, racemic mixture, optically active compound, optically active compound separation, tetra coordinated chelate

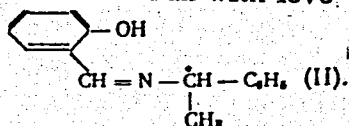
ABSTRACT: The possibility of obtaining chelates in which the metal is attached to two different ligands was investigated using compounds of the type A:



Card 1/3

ACCESSION NR : AP4030786

in which $R_1 = \text{CH}_3$ - and $R_2 = \text{C}_6\text{H}_5$ -, $\text{C}_6\text{H}_5\text{CH}_2$ - or $\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)$ -. X-rays showed the products formed were mechanical mixtures of materials with paired ligands $R_1=R_2$. Experiments were then run with levo- and dextrorotatory salicylal alpha-phenylethyylimine II:



where the differences in R_1 and R_2 is caused by their configuration. Polarimetric titration of a solution of mixed 1- and d-salicylal-alpha-phenylethyylimine with copper acetate established that a mixture of chelates with evenly paired ligands (in a ratio approximating the 1- and d- form of the original amine) was formed in the solution. On crystallization a racemic mixture precipitated, leaving the solution enriched in the optically active form. Thus the optically active part of the amine may be separated from its racemate by crystallization. Experiments run with bis-(alpha-phenylethyldithiocarbamate)-nickel did not give positive results. In the type A compounds, the chelates most favored energetically are those in which $R_1 = R_2$, i.e., chelates with evenly paired ligands. Orig. art. has: 1 table and 2 formulas.

Card: 2 / 3

ACCESSION NR: AP4030786

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University)

SUBMITTED: 16Nov63

ATD PRESS: 3071

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 000

OTHER: 003

Card 3/3

TERENT'YEV, A.P.; RODE, V.V.; RUKHADZE, Ye.G.

Chelate polymers. Part 7: Chelate polymers based on
2,6-diacetylpyridine. Vysokom.sced. 5 no.11:1658-1665 N '63.
(MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

RODE, V.V.; RUKHADZE, Ye.G.; TEREENT'YEV, A.P.

Chelate polymers. *Usp.khim* 32 no.12:1488-1524 D '63. (MIRA 17:2)

1. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

TERENT'YEV, A.P.; RODE, V.V.; RUKHADZE, Ye.G.

Chelate polymers. Part 8: Some aspects of the structure of chelate polymers. Vysokom.sped. 5 no.11:1666-1670 N '63. (MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova

TERENT'YEV, A.P.; RUKHADZE, Ye.G.; PANOVA, G.V.; MOCHALINA, I.G.

Macromolecular compounds, derivatives of pyridine. Part 2: Thioamides and polythioamides based on some alkyl pyridines. Vysekem.sned. 5 no. 6:842-845 Je '63. (MIRA 16:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Amides) (Polyamides) (Pyridine)

TERENT'YEV, A.P.; RUKHADZE, Ye.G.; VOZZHENNIKOV, V.M.; ZVONKOVA, Z.V.;
OBOLADZE, N.S.; MOCHALINA, I.G.

Conductance and activation energy of chelate compounds of
dithiocarbamates and thioamides, derivatives of pyridine.
Dokl. AN SSSR 147 no.5:1094-1097 D '62. (MIRA 16:2)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova i Moskovskiy
gosudarstvennyy universitet im. M.V. Lomonosova. 2. Chlen-korres-
pondent AN SSSR (for Terent'yev).
(Chelates) (Carbamic acid) (Amides)

TERENT'YEV, A.P.; RUKHADZE, Ye.G.; MOCHALINA, I.G.; PANOVA, G.V.

Macromolecular compounds, derivatives of pyridine. Part 1: Polyamides based on 2,6-lutidine. Vyssokom.sped. 5 no.6:837-841 Je '63. (MIRA 16:9)

1. Moskovskiy gosudarstvennyy univeritet im. M.V.Lomonosova.
(Polyamides) (Lutidine)

L 13520-63

EWP(j)/EWT(m)/BDS ASD Pc-14 RM/MAY

ACCESSION NR: AP3001154

S/0190/63/005/006/0837/0841

63
63

AUTHOR: Terent'yev, A. P.; Rukhadze, Ye. G.; Mochalina, I. G.; Panova, G. V.

TITLE: Studies on high-molecular pyridine derivatives. 1. Polyamides on the basis of 2,6-lutidine

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 6, 1963, 837-841

TOPIC TAGS: pyridine derivative, polyamide, 2,6-lutidine, interfacial polycondensation

ABSTRACT: To achieve the synthesis of desired polyamides a solution of the di-chloride of pyridine-2,6-dicarboxylic acid in benzene was reacted by interfacial polycondensation with an alkaline or acid aqueous solution of a number of aliphatic and aromatic diamines. These were ethylenediamine, tetramethylenediamine, o-phenylenediamine, benzidine, o-tolidine, 4,4'-diaminodiphenylmethane, 4,4'-diaminobenzophenone and 4,4'-diaminodiphenylsulphone. The resulting polyamides were white or slightly colored substances, almost insoluble in organic solvents. The lengthening of the aliphatic chain lowered the melting point of the polyamides from 298-300C to 235-240C and slightly increased their solubility and viscosity. The presence of aromatic rings in the macromolecules rendered them harder and more thermoresistant

Card 1/2

L 13520-63

ACCESSION NR: AP3001154

and lowered their solubility. The obtained polyamides were outstanding in their resistance to concentrated hydrochloric acid, sodium hydroxide, bromine, and hydrogen peroxide. X-ray examination revealed their amorphous structure. Orig. art. has: 1 formula and 2 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 20Nov61

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 010

OTHER: 002

Card 2/2

L 13521-63 EWP(j)/EWT(m)/BDS ASD Pc-l RM
 ACCESSION NR: AP3001155 S/0190/63/005/006/0842/0845

AUTHOR: Terent'yev, A. P.; Rukhadze, Ye. G.; Panova, G. V.; Mochalina, I. G.

TITLE: Studies on high-molecular pyridine derivatives. 2. Polyamides and polythioamides, on the basis of certain alkylpyridines 7

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 6, 1963, 842-845

TOPIC TAGS: pyridine, polyamide, polythioamide, alkylpyridine, tautomerism

ABSTRACT: The present investigation is a continuation of the earlier work by the authors on polyamides on the basis of 2,6-lutidine. Since the objective was the synthesis of thioamides and polythioamides, this study also included alpha-picoline. These compounds were obtained by prolonged heating of the corresponding alkylpyridine and of diamines (bensidine, o-tolidine, and o-dianizidine) with an excess of sulfur at 160-200C. Where 2,6-lutidine constituted the base, it was necessary to react it with a double amount of diamine and a tenfold quantity of sulfur in order to obtain polythioamides, while at a 4:1:10 ratio only one methyl group of 2,6-lutidine entered into the reaction. These synthesized polythioamides are colored powdery substances, some of which show an amorphous structure on a Debyeagram, while infrared spectra revealed the presence of a thioureide group. It is concluded that

Card 1/82

L 13521-63

ACCESSION NR: AP3001155

the thioamides and polythioamides may exist in two tautomeric forms. Orig. art.
has: 4 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow
State University)

SUBMITTED: 20Nov61

DATE ACQ: 01Jul63

ENCL: 01

SUB CODE: 00

NO REF SOV: 006

OTHER: 002

Card 2/12

KEYYER, N.P.; BORESKOV, G.K.; RUBTSOVA, L.F.; RUKHADZE, Ye.G.

Catalytic activity of organic polymers. Part 3: Some regularities of catalytic activity on the chelate polymers of various chemical composition and structure. Kin.i kat. 3 no.5:680-690 S-O '62.
(MIRA 16:1)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Chelates) (Catalysis)

KEYYER, N.P.; TROITSKAYA, M.G.; RUKHADZE, Ye.G.

Catalytic activity of organic polymers. Part 4: Catalytic activity of chelate polymers in the reaction of hydrogen peroxide decomposition. Kin. i kat. 3 no.5:691-697 S-0 '62. (MIRA 16:1)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Chelates) (Catalysis) (Hydrogen peroxide)

S/075/63/018/003/005/006
E071/E436

AUTHORS: Terent'yev, A.P., Litvin, K.I., Rukhadze, Ye.G.

TITLE: Preparation of pure precipitates by reagents forming
in situ

PERIODICAL: Zhurnal analiticheskoy khimii, v.18, no.3, 1963, 406-407

TEXT: The possibility of using the above method was demonstrated
by precipitation of barium sulfate in the presence of a large
excess of calcium (1 to 10) from dimethylsulfate-glycerine
solutions. Radioactive Ca^{45} was used for the experiments.
The coprecipitation of calcium was negligible (only 0.9 to 1.0%).
There is 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.
M.V.Lomonosova (Moscow State University imeni
M.V.Lomonosov)

SUBMITTED: June 9, 1962

Card 1/1

L 13520-63

EWP(j)/EWT(m)/BDS ASD Pc-4 RM/MAY

ACCESSION NR: AP3001154

S/0190/63/005/006/0837/0841

63
62

AUTHOR: Terent'yev, A. P.; Rukhadze, Ye. G.; Mochalina, I. G.; Panova, G. V.

TITLE: Studies on high-molecular pyridine derivatives. 1. Polyamides on the basis of 2,6-lutidine

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 6, 1963, 837-841

TOPIC TAGS: pyridine derivative, polyamide, 2,6-lutidine, interfacial polycondensation

ABSTRACT: To achieve the synthesis of desired polyamides a solution of the di-chloride of pyridine-2,6-dicarboxylic acid in benzene was reacted by interfacial polycondensation with an alkaline or acid aqueous solution of a number of aliphatic and aromatic diamines. These were ethylenediamine, tetramethylenediamine, o-phenylenediamine, benzidine, o-tolidine, 4,4'-diaminodiphenylmethane, 4,4'-diaminobenzophenone and 4,4'-diaminodiphenylsulphone. The resulting polyamides were white or slightly colored substances, almost insoluble in organic solvents. The lengthening of the aliphatic chain lowered the melting point of the polyamides from 298-300C to 235-240C and slightly increased their solubility and viscosity. The presence of aromatic rings in the macromolecules rendered them harder and more thermoresistant

Card 1/2

L 13520-63

ACCESSION NR: AP3001154

and lowered their solubility. The obtained polyamides were outstanding in their resistance to concentrated hydrochloric acid, sodium hydroxide, bromine, and hydrogen peroxide. X-ray examination revealed their amorphous structure. Orig. art. has: 1 formula and 2 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 20Nov61

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 010

OTHER: 002

Card 2/2

BORESKOV, G.K.; KEYYER, N.P.; RUBTSOVA, L.F.; RUKHADZE, Ye.G.

Catalytic properties of chelate (inner complex) polymers. Dokl.
AN SSSR 144 no.5:1069-1072 Je '62. (MIRA 15:6)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR, Novosibirsk
i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
2. Chlen-korrespondent AN SSSR (for Boreskov).
(Chelates) (Catalysis)

TERENT'YEV, A.P.; RODE, V.V.; RUKHADZE, Ye.G.

Chelate polymers. Part 6: Some physicochemical properties
of chelate polymers of bis-dithiocarbamic acids with metals.
Vysokom.soed. 4 no.7:1005-1010 J1 '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Chelates)
(Carbamic acid)

43821

8/020/62/147/005/019/032
B106/B186

10090
AUTHORS: Terent'yev, A. P., Corresponding Member AS USSR, Rukhadze,
Ye. G., Vozzhennikov, V. M., Zvonkova, Z. V., Oboladze, N. S.,
Mochalina, I. G.

TITLE: Electrical conductivity and activation energy of chelate
compounds of the dithiocarbamates and thioamides of pyridine
derivatives

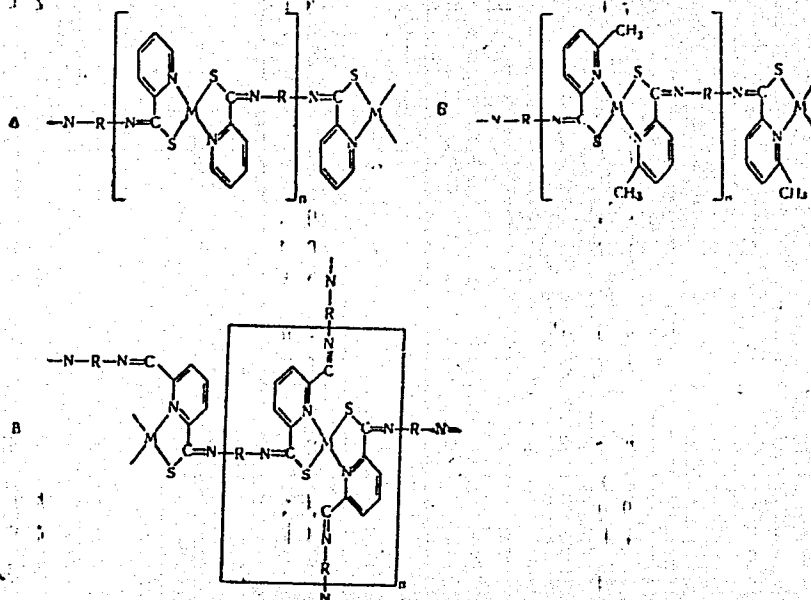
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 5, 1962, 1094-1097

TEXT: The temperature dependence of the electrical conductivity σ of
chelate polymers of the following structures A, B, and C has been deter-
mined:

Card 1/6

Electrical conductivity and...




S/020/62/147/005/019/032
B106/B186



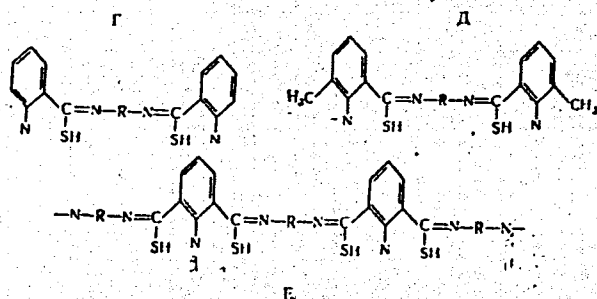
Card 2/6

Electrical conductivity and...

S/020/62/147/005/019/032
B106/B186

M = Cu, Co, Zn; R =  (1),  (2),  (3).

For comparison, the compounds Г, Д, and the polymer Е (initial products in the synthesis of the above chelate polymers), and the compounds М and 3 (М - Cu, Co, Zn) (monomers of polychelates investigated earlier (Ref. 2; V. M. Vozzhennikov et al, DAN, 143, 5 (1962)) have been studied analogously:



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Electrical conductivity and...

S/O20/62/147/005/019/032
B106/B186

not by the packing of molecules in the crystal. Activation energies between 1.2 and 1.6 eV were found for the 30 compounds with the grouping $M...S=C-N<$ investigated in Ref. 2 and in the present paper. An activation energy of this order has also been found for CuSCN, the simplest semiconductor polymer with the grouping $S=C-N-$. There are 2 figures and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov); Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 22, 1962

Card 5/6

Electrical conductivity and...

S/020/62/147/005/019/032
B106/B186

Table 1. Legend: I structure; II radical; III metal; IV E, ev; * the first values at $T < 410^{\circ}\text{K}$, the second at $T > 410^{\circ}\text{K}$.

Card 6/6

TERENT'YEV, A.P.; RUKHADZE, Ye.G.; RODE, V.V.; PANOVA, G.V.

Chelate polymers. Part 9: Polymers of 4,4'-bis-
(*d*-thioalkylpyridinamido)diphenyls with metals. Vysokom.
soed. 4 no.4:566-570 Ap '62. (MIRA 15:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Chelates)

VOZZHENNIKOV, V.M.; ZVONKOVA, Z.V.; RUKHADZE, Ye.G.; ZHDANOV, G.S.;
GLUSHKOVA, V.P.

Electric conductivity and activation energy of some dithiooxamide,
N-substituted dithiocarbamate, and thiocyanate (Cu, Co, Ni) polymers.
Dokl. AN SSSR 143 no.5:1131-1134 Ap '62. (MIRA 15:4)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova. Predstavleno
akademikom V.A.Karginym.

(Polymers—Electric properties) (Thiocyanates)
(Organometallic compounds)

KEYYER, N.P.; BORESKOV, G.K.; RODE, V.V.; TEREENT'YEV, A.P.; RUKHADZE, Ye.G.

Catalytic activity of organic semiconductors. Part 1: Chelate
polymers. Kin.i kat. 2 no.4:509-518 JI-Ag '61. (MIRA 14:10)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR i Khimicheskiy
fakul'tet Moskovskogo gosudarstvennogo universiteta.
(Chelates) (Catalysis)

TERENT'YEV, A.P.; RODE, V.V.; RUZHADZE, Ye.G.; VOZZHENNIKOV, V.M.;
BADZHADZE, L.I.

Electric conductivity of chelate polymers. Dokl. AN SSSR 140
no.5:1093-1095 0 '61. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova
i Fiziko-khimicheskiy institut im. L.Ya. Karpova.
2. Chlen-korrespondent AN SSSR (for Terent'yev).
(Chelates—Electric properties)

386.11

S/020/62/144/005/011/017

B124/B138

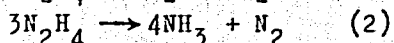
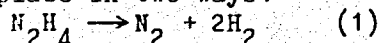
5.3750 11.2205
11.1325

AUTHORS: Boreskov, G. K., Corresponding Member, AS USSR, Keyyer, N. P.,
Rubtsova, L. F., and Rukhadze, Ye. G.

TITLE: Catalytic properties of chelate (intracomplex) polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 5, 1962, 1069-1072

TEXT: The article covers studies of the effect of the following: on the catalytic activity of chelate polymers the decomposition of hydrazine, the metal component, the chemical composition of the atoms of the admixtures in the chelate center, and the organic portion of the polymer in the main or side-chains. Structures and compositions of the polymers are given in Table 1. Hydrazine decomposition is sensitive to the electron state of the contact, and takes place in two ways:



The selectivity of a polymer catalyst can be assessed from the way in which its structure and chemical composition affect the direction of hydrazine

Card

1/8 3

Catalytic properties of...

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B124/B138

decomposition. The decomposition of isopropyl alcohol and formic acid by dehydrogenation was also studied. No oxidation of CO took place on the polymers studied until 200°C. Table 2 gives experimental data on the specific decomposition rate of hydrazine at 108°C in the presence of various polychelates. The following decreasing order was found for the catalytic activity of polychelates of copper with chelate centers of different compositions: $\text{Cu(N,S)} > \text{Cu(S,S)} > \text{Cu(N,O)} > \text{Cu(O,O)}$. The catalytic activity of chelate polymers is twice as high as that of inorganic copper semiconductors. The same was found for the polychelates of nickel investigated. Fig. 3 shows the dependence of the selectivity of the copper polychelates on their chemical composition and structure. It is concluded that the catalytic activity and selectivity of a polychelate depends on: 1) the metal entering into the polychelate; 2) the nature of admixtures entering into the chelate center; and 3) to a considerable degree, the organic part of the polymer. There is thus an analogy between the rules governing the catalytic properties of these polymers and that of ferments. There are 3 figures and 2 tables. The English-language reference is: E. Leslie, Orgel, An Introduction to Transition-Metal Chemistry. Ligand-Field Theory, London, 1960. X

Card 2/0.3

Catalytic properties of...

S/020/62/144/005/011/017
B124/B138

ASSOCIATION: Institut kataliza Sibirskogo otdeleniya Akademii nauk SSSR
Novosibirsk (Institute of Catalysis of the Siberian
Department of the Academy of Sciences USSR, Novosibirsk).
Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: December 8, 1961

Table 1. Study of chelate polymers.

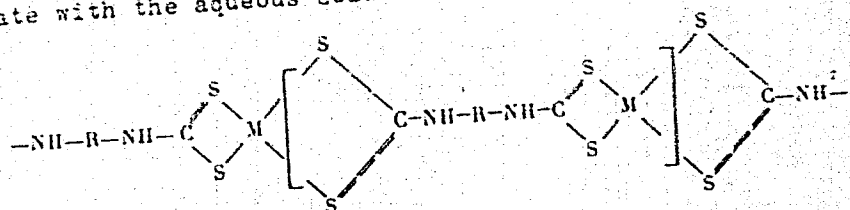
Legend: (A) polymer; (B) Organic compound on the basis of which the
polychelate was isolated; (D) Chelate center; (E) Composition of
polychelate; (F) Sodium bis-di-thiocarbamate; (G) α -thioalkylpyridine
amidodiphenyl; (J) 2b Rubianic acid; (K) Poly-(4,4' bis)- α -thio-2,6-lutidine
amidodiphenyl; (L) 5,5'-methylene-bis-salicylaldehyde; (M) 3b Diacetyl
resorcinol; (P) 4b Dinitrosoresorcinol.

Card 3/4 3

30279
S/190/62/004/006/005/026
B101/B110

15 2/5
AUTHORS: Terent'yev, A. P., Rukhadze, Ye. G., Rode, V. V.
TITLE: Studies of chelate polymers. V. Chelate polymers of bis-dithiocarbamic acids and metals
PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 6, 1962, 821-827

TEXT: Chelate polymers of ethylene, hexamethylene, p-phenylene, and p,p'-diphenylene-bis-dithiocarbamic acids with Ni^{2+} , Zn^{2+} , Co^{2+} , and Cu^{+} were synthesized by mixing the aqueous solution of the sodium bis-dithiocarbamate with the aqueous solution of the metal acetate. The structure



Card 1/2

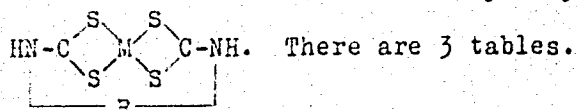
S/190/62/004/006/005/026

5101/B110

Studies of chelate polymers.

is assumed for the chelates of Ni, Zn, and Co, where
 $R = -(CH_2)_2-$; $-(CH_2)_6-$; $p-C_6H_4-$, or $p,p'-(C_6H_4)_2-$; $M = Ni^{2+}, Zn^{2+}, Co^{2+}$.

The Cu^{2+} reacts with the sodium bis-dithiocarbamates, sulfur and carbonyl sulfide, being liberated and Cu^{2+} being reduced to Cu^+ . A copper-containing polymer with network structure is formed. The chelates are finely disperse, colored powders, poorly soluble and not fusible. Their properties are little affected by the nature of the R radical. The poor solubility, along with the molecular weight of chelates as determined by reaction of Br^{82} -tagged metal bromides with sodium dithiocarbamates (53,000-67,000, polymerization coefficient 160-215), led to the conclusion that the chelates of Ni, Zn, and Co with ethylene and hexamethylene-bis-dithiocarbamate can contain only very small amounts of cyclic structure



ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
 (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 31, 1951
 Card 2/2

35295

S/190/62/004/004/012/019

B117/B138

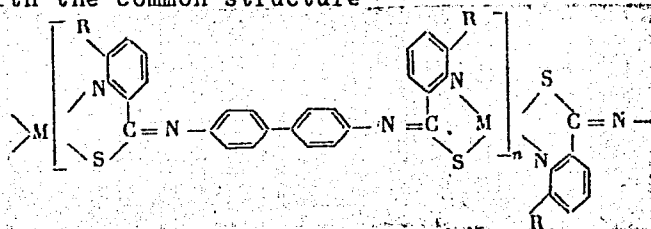
15.8600

AUTHORS: Terent'yev, A. P., Rukhadze, Ye. G., Rode, V. V., Panova, G. V.

TITLE: Investigations in chelate polymers. IV. Polymers of 4,4'-bis-(α -thioalkylpyridineamido)diphenylene with metals

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 4, 1962, 566-570

TEXT: Polymers with the common structure



R = H- and CH_3 -; M = Cu^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} were studied. For these compounds

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S/190/62/004/004/012/019
B117/B138

Investigations in chelate polymers...

pounds, the chelate node of which can be written as 2(N,S)-M, the designation bis-(azathia) polychelate was proposed. From 4,4'-bis(α -thiopicoline-amido)diphenyl ($C_{24}H_{18}N_4S_2$, needle-shaped orange crystals, melting point $238^\circ C$, yield 53%) and 4,4'-bis-(α -thio-2,6-lutidineamido)diphenyl ($C_{26}H_{22}N_4S_2$, orange red crystals, melting point $223^\circ C$, yield 22%, described for the first time), polychelate polymers were produced having qualitative yield with bivalent metals at room temperature. Using Debye-Scherrer photographs, the structure of these finely dispersed colored powders was found to be amorphous. Investigation of the heat resistance of bis-(azathia)polychelates showed that their decomposition sets in at about $200^\circ C$. Total destruction under formation of metal oxides, however, began only after 3 hr heating at $800-1000^\circ C$. Nickel and zinc polychelates proved to be more heat-resistant than polymers with copper and cobalt ions. Polychelates with the structure mentioned are also chemically stable. Investigation of their spectra showed that the absorption maxima of bis-(azathia)polychelates are somewhat displaced towards the long-wave range as compared with bis-(azaoxa)- and bis-disoxapolychelates, and that only polymers with zinc ions show weak luminescence. Magnetochemical investigations gave some information on the

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Investigations in chelate polymers...

S/190/62/004/004/012/019
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structure of chelate nodes of the polymers produced. Polychelates with zinc content and those without unpaired electrons in the molecule proved to be diamagnetic as expected. Purity and structure of these polymers were confirmed by means of experimentally determined molar magnetic susceptibilities and those calculated from Pascal constants. For polymers with unpaired electrons in the molecule (Ni-, Co-, Cu polychelates), tetrahedral structure of the chelate node was assumed in agreement with published data. There are 2 figures and 2 tables. The two English-language references are: K. V. Martin, J. Amer. Chem. Soc., 80, 233, 1958; A. E. Martell, M. Calvin, Chemistry of the metal chelate compounds, New York, 1953.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 16, 1961

Card 3/3

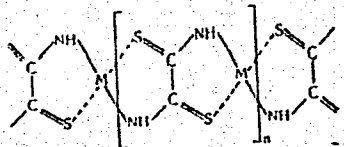
30315
S/020/62/143/005/013/018
B101/B110

15.8340
AUTHORS: Vozzhennikov, V. M., Zvonkova, Z. V., Rukhadze, Ye. G.,
Zhdanov, G. S., and Glushkova, V. P.

TITLE: Electrical conductivity and activation energy of some
dithio oxamide-, N-substituted dithiocarbamate-, and
thiocyanate (Cu, Co, Ni) polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962,
1131-1134

TEXT: The electrical conductivity, σ , and the activation energy, E, of
the following polychelates were studied:



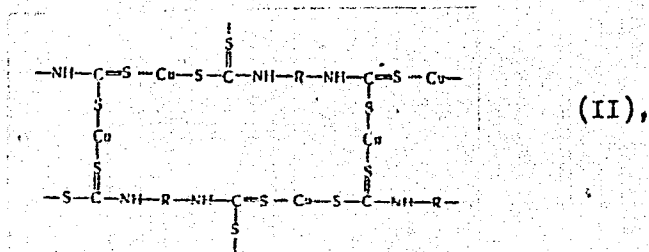
(I),

Card 1/5

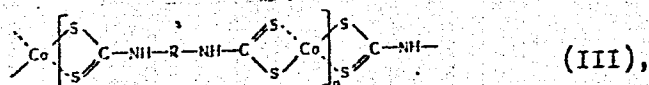
Electrical conductivity and ...

S/020/62/143/005/013/018
B101/B110

M = Cu, Ni, or Co;



R = p-C₆H₄-; p,p-(C₆H₄)₂-; (CH₂)₆; and



R = p-C₆H₄-; p,p-(C₆H₄)₂-; (CH₂)₆; (CH₂)₂. The following was found:

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S/020/62/143/005/013/018
B101/B110

Electrical conductivity and ...

| Polymer | M, R | T, °K | $\sigma_{290^\circ K}$ ohm ⁻¹ ·cm ⁻¹ | σ_0 ohm ⁻¹ ·cm ⁻¹ | E, ev |
|---------|---|---------|---|---|-----------------|
| I | Cu | 290-350 | $4 \cdot 10^{-8}$ | $1 \cdot 10^4$ | 0.6 |
| " | Ni | 290-500 | $2 \cdot 10^{-11}$ | $7 \cdot 10^{-1}$ | 0.6 |
| " | Co | 400-500 | $7 \cdot 10^{-16}$ * | $1 \cdot 10^{-3}$ | 0.7 |
| II | p-C ₆ H ₄ - | 290-425 | $7 \cdot 10^{-11}$ | 1 | 0.42; 0.62 } ** |
| " | p,p-(C ₆ H ₄) ₂ - | 290-450 | $5 \cdot 10^{-13}$ | $1 \cdot 10^{-3}$ | 0.36; 0.60 } ** |
| " | (CH ₂) ₆ | 310-380 | $1 \cdot 10^{-13}$ | $2 \cdot 10^{-1}$ | 0.72 |
| III | p-C ₆ H ₄ - | 370-460 | $9 \cdot 10^{-12}$ | $1 \cdot 10^{-3}$ | 0.58 |
| " | p,p-(C ₆ H ₄) ₂ - | 380-460 | $3.5 \cdot 10^{-12}$ | $3 \cdot 10^{-3}$ | 0.62 |
| " | (CH ₂) ₆ | 400-460 | $1.7 \cdot 10^{-12}$ *** | $5 \cdot 10^{-3}$ | 0.76 |
| " | (CH ₂) ₂ | 400-460 | $8 \cdot 10^{-13}$ | $1 \cdot 10^{-3}$ | 0.74 |

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S/020/62/143/005/013/018
B101/B110

Electrical conductivity and ...

* extrapolated; ** first figure at $T < 360^{\circ}\text{K}$, second figure at $T > 360^{\circ}\text{K}$; *** $\sigma_{400^{\circ}\text{K}}$. In the compounds II and III the higher σ and the lower E of the phenylene derivatives are explained by the effect of the π bonds which is reduced in the diphenylene group owing to the angle between the ring planes. $\log \sigma$ is a linear function of $1/T$, the straight line has, however, a salient point at 360°K for compounds II. The susceptibility of compounds III is $3.5 \mu\text{B}$. Compounds with the bridge groups $\text{S}=\text{C}=\text{N}-$ have semiconductor properties. Also CuSCN showed a salient point in the curve $\log \sigma$ versus $1/T$: at the beginning, $E_1 = 0.4 \text{ ev}$, after a 2-hr heating at 400°C , $E_2 = 0.1 \text{ ev}$. There are 4 figures and 1 table. The most important English-language reference is: R. M. Hurd, G. De La Mater et al., J. Am. Chem. Soc., 17, 4454 (1960).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

Card 4/5

Electrical conductivity and ...

S/020/62/143/005/013/018
B101/B110

PRESENTED: December 2, 1961, by V. A. Kargin, Academician

SUBMITTED: November 30, 1961

Card 5/5

RUKHADZE, Ye.G.

54400

31090
S/195/61/002/004/005/008
E111/E585

AUTHORS: Keyyer, N.P., Boreskov, G.K., Rode, V.V.,
Terent'yev, A.P. and Rukhadze, Ye.G.

TITLE: Catalytic activity of organic semiconductors.
1. Polychelates

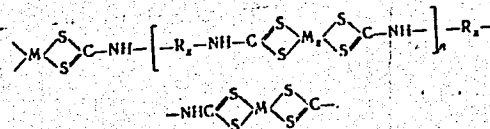
PERIODICAL: Kinetika i kataliz, v.2, no.4, 1961, 509-518

TEXT: The authors investigated various classes of organic polymers in order to establish the catalytic capacity of organic semiconductors and the relationship between their electrical conductivity and catalytic activity. The present work deals with polychelates of a given structure whose electrical conductivity varies by more than ten orders, depending on chemical composition. As regards chemical composition and structure the polychelates were of two types: 1) the sulphur atoms constitute the electron donor and, together with the metal, form the chelate group, which is connected with the radical by the -N-C group

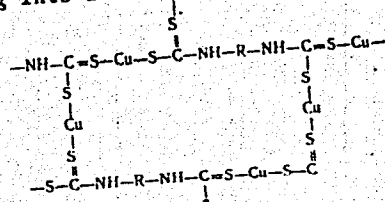
Card 1/4

Catalytic activity of ...

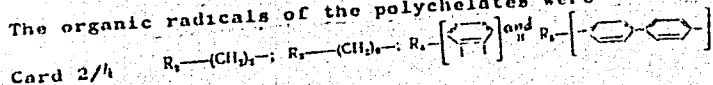
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E111/E585



2) monovalent copper forms two coordination linear bonds
-S-Cu-S- evolving into a reticular structure



The organic radicals of the polychelates were



Catalytic activity of .

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E111/E585

The polychelates were synthesized through the interaction of equimolar aqueous solutions of the metal acetates with soda bis-dithiocarbamates $R_2(NHCSNa)_2$ the molecular weight of the polychelates was 53×10^3 to 67×10^3 . The activity of twelve Ni, Cu, Co, Zn and Cd polychelates was studied in the decomposition reaction of 93% pure hydrazine hydrate at temperatures from 74 to 104°C. The Ni, Cu and Co polychelates displayed the highest catalytic activity 100 times greater than that of NiO and NiS semiconductor catalysts; the Ni polychelate R_2Ni (type I) had the highest activity and remained stable even after exposure to air. Zn and Cd polychelates displayed no activity at 104°C. The organic radicals had marked and varied effects on the catalytic activity of the polychelates. The catalytic activity of Ni polychelates was affected most; the highest activity was displayed by Ni polychelates with the organic radical R_2 and by Cu polychelates with R_2 ; the activity of the Co polychelates was affected only slightly by the organic radical. Although the results do not disclose any relation between the volume electrical conductivity $\delta_{23} \text{ (ohm-cm)}^{-1}$ and the catalytic activity of the polychelates, the

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Catalytic activity of

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pronounced effect of the organic radical on catalytic activity indicates a dependence of such activity on the electron state of the metal, which is conditioned by the donor groups and the organic radical entering into the composition of the polychelate. It is suggested that the electron effect on catalytic activity will be better understood when more is known about the regularities in the change of the surface electrical properties of the polychelates. Acknowledgments are expressed to Z. V. Zvonkova, V. M. Vozzhennikov and L. I. Badzhadze for data on the electrical conductivity of the samples and valuable advice. There are two tables, 6 figures and 10 Soviet-bloc references.

ASSOCIATION: Institut kataliza SO AN SSSR Khimicheskoy fakul'tet
MGU (Institute of Catalysts SO AS USSR Chemical
Faculty MGU)

SUBMITTED: May 22, 1961

Card 4/4

32342
S/190/62/004/001/003/020
B101/B110

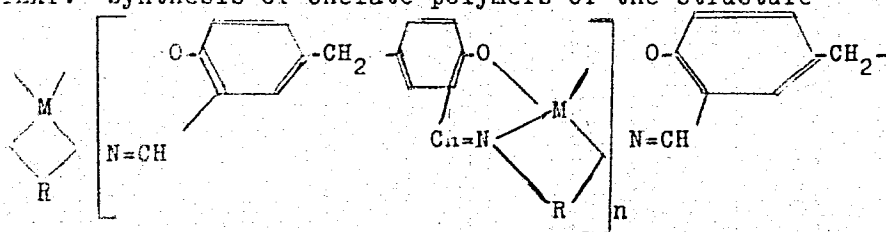
5.3750

AUTHORS: Rode, V. V., Nekrasov, L. I., Terent'yev, A. P.,
Rukhadze, Ye. G.

TITLE: Studies in the series of chelate polymers. II. Some
physicochemical properties of chelate polymers on the basis
of 5,5' - methylene-bissalicylic aldehyde

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 1, 1962, 13-19

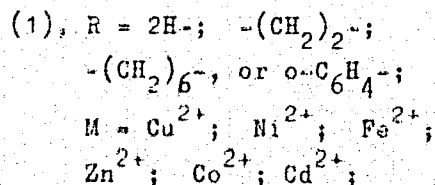
TEXT: Synthesis of chelate polymers of the structure



Card 1/5

Studies in the series of ...

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S/190/62/004/001/003/020
B101/B110



was described in Vysokomolek. sojed., 2, 1557, 1960. Now their physico-chemical properties are reported. All chelates are colored, finely disperse, insoluble powders. Debye patterns showed that they were amorphous. Thermostability was examined by heating in air and measuring of the loss in weight by a continuous SC-HS-20 (VR-NV-20) balance. An intensive

destruction took place between 260 and 310°C. Prior to decomposition temperature, loss in weight amounted to 2.5 - 6%. Stability decreased depending on the respective substituent in the sequence

$R = 2H- / o-C_6H_4- > -(CH_2)_2- > -(CH_2)_6-$. Sequence $Ni^{2+} > Cd^{2+} > Cu^{2+} > Zn^{2+}$
 $> Co^{2+} > Fe^{2+}$ was obtained depending on the metal used. The reflection

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S/190/62/004/001/003/020

B101/B110

Studies in the series of ...

spectra of chelates were recorded. Absorption maxima (reflection minima) were close to the values for the corresponding monomers. Luminescence (in a decreasing sequence) was observed in compounds with Zn, Cd, Ni, Co, and Cu. Fe compounds did not luminesce. According to Faraday, magnetic susceptibility was determined at 7000 oe by a torsion balance. Zn and Cd chelates proved to be diamagnetic; Cu, Fe, and Co chelates were paramagnetic, those of nickel with R = 2H- and $-(CH_2)_6-$ were paramagnetic while chelates with R = $-(CH_2)_2-$ and o-C₆H₄- were diamagnetic. χ_M for Zn was -123.1 with R = 2H-, and -153.1 with R = $-(CH_2)_2-$; -169.3 ($-(CH_2)_6-$), -194.1 (o-C₆H₄-). The values for Cd are as follows: -160.2 ($-(CH_2)_2-$); -200.7 ($-(CH_2)_6-$), and -220.0 (o-C₆H₄-); for Ni: -158.4 ($-(CH_2)_2-$), and -178.2 (o-C₆H₄-). Magnetic moments of the paramagnetic compounds expressed in μ_B have the following values: for Ni 2.51, with R = 2H-; 3.47 with $-(CH_2)_6-$; for Cu, 1.79 with 2H-; 1.62 with $-(CH_2)_2-$, 1.43 with

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S/190/62/004/001/003/020

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Studies in the series of ...

$-(CH_2)_6-$, and 1.45 with $o-C_6H_4-$; for Fe (in the same sequence of substituents) 5.32, 3.66, 5.09, 3.72; for Co: 4.01, 4.13, 5.25, and 4.23. A plane configuration of nodes is assumed for diamagnetic Ni chelates and a tetrahedral one for paramagnetic chelates. In the presence of the first and third substituents, Fe forms a tetrahedral, in the presence of the two other substituents, however, it forms a plane configuration. The Co chelate with $R = -(CH_2)_6-$ is tetrahedral. μ_B values of the other Co compounds indicate a combination of plane and tetrahedral nodes. An epr resonance was observed in Cu compounds only. The g factor decreased parallel to the μ_B value. N. I. Kobozev and V. B. Golubev are thanked for discussion. There are 3 figures, 6 tables, and 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: A. E. Martell, M. Calvin, Chemistry of the metal chelate compounds, New York, 1953.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova

Card 4/5

Studies in the series of ...

32342
S/190/62/004/001/003/020
B101/B110

(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: January 12, 1961

Card 5/5

32351
S/190/62/004/001/013/020
B110/B101

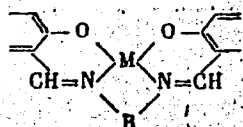
5.8750

AUTHORS: Terent'yev, A. P., Rode, V. V., Rukhadze, Ye. G.

TITLE: Studies in the series of chelate polymers. III. Some polymers of 5,5'-methylene-bis-salicylic aldehyde with metals

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 1, 1962, 91 - 94

TEXT: In preceding papers (Vysokomolek. soyed., 2, 1557, 1960, *ibid.*, 4, 13, 1961) the authors had stated that metals with polymers form bis-(aza-oxa)-polychelates having the following chelate link (2(O, N)-M): ...



(I).

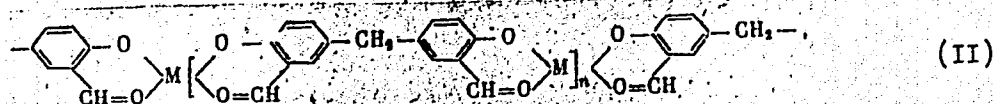
For examining the properties of polymers with 2(O, O)-M links, bis-dioxapolychelates ...

Card 1/4

32351

S/190/62/004/001/013/020
B110/B101

Studies in the series of ...



were used, where $\text{M} = \text{Cu}^{2+}, \text{Ni}^{2+}, \text{Fe}^{2+}, \text{and } \text{Co}^{2+}$. Equimolecular quantities of an alcoholic solution of 5,5'-methylene-bis-salicylic aldehyde with aqueous solutions of metal acetates polymerized at room temperature. The polymers unsoluble in alcohol, acetone, ether, dimethyl formamide, and tetrahydrofuran were washed out with water and alcohol, and thus freed from non-reacted metal and aldehyde. After vacuum drying, they represent fine-disperse, colored powders the Debye patterns of which showed amorphism. The unmeltable polymers decomposed at $>250^\circ\text{C}$. The curves of heat resistance obtained by photographic recording of the losses in weight by means of the recording balance BP-HB-20 (VR-NV-20) showed an intensive destruction at $260 - 300^\circ\text{C}$ (losses in weight at decomposition temperature = 4 - 6%). At $350 - 400^\circ\text{C}$, quantitative formation of metal oxide takes place. As to heat resistance of bis-dioxa-polychelates, the order

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32351

S/190/62/004/001/013/020

B110/B101

Studies in the series of ...

$Ni^{2+} > Cu^{2+} > Co^{2+} > Fe^{2+}$ was found. In this respect, the polymers produced correspond to those with 2(N, O)-M links. The reflection spectra showed maxima close to the maxima of the monomers and the 2(N, O)-M chelates.

The Ni^{2+} and Co^{2+} chelates of structure II showed weak luminescence.

The magnetic moments, μ_B , determined at 7000 oersteds were 1.72 for compounds of Cu^{2+} , 2.80 for Ni^{2+} , 4.79 for Fe^{2+} , 3.84 for Co^{2+} . The paramagnetism of poly-5,5'-methylene-bis-salicylic aldehyde of Ni is due to the presence of two unpaired electrons in the nickel ion and, thus, to the tetrahedral structure of the chelate link. The μ_B value of the Fe compound corresponds to four unpaired electrons in the Fe ion and, thus, also to tetrahedral structure. The magnetic moment of Co polychelate, somewhat lower as compared to the tetrahedral cobalt complexes, is probably due to the simultaneous presence of planar chelate links. The magnetic moment of the Cu compound corresponds to an unpaired electron. Electron paramagnetic resonance could be only found in the Cu compound: width of peak = 210.0 oersteds, number of paramagnetic particles per

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32351

S/190/62/004/001/013/020

B110/B101

Studies in the series of ...

$g = 2.71 \cdot 10^{21}$, g factor = 2,117. There are 2 figures, 2 tables, and 3 references: 2 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: A. E. Martell, M. Calvin, Chemistry of the metal chelate compounds, N. Y., 1953.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 1, 1961

Card 4/4

15.8540

29120
S/020/61/140/005/016/022
B103/B110

AUTHORS: Terent'yev, A. P., Corresponding Member AS USSR, Rode, V. V.,
Rukhadze, Ye. G., Vozzhennikov, V. M., Zvonkova, Z. V.,
and Badzhadze, L. I.

TITLE: Electrical conductivity of chelate polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 5, 1961, 1093-1095

TEXT: The authors measured the electrical conductivity σ and the activation energy E of several chelate polymers to determine the dependence between their semiconductor properties and their atomic structure. These polymers were mostly synthesized by interaction of equimolecular aqueous solutions of metal acetates and alcoholic solutions of the corresponding tetrafunctional organic compounds. The substances obtained were amorphous, insoluble, and infusible. Their decomposition temperatures were above 250-350°C. More data will be published in the coming issues of the periodical "Vysokomolekulyarnyye soyedineniya". For measuring the electrical conductivity samples in tablet form were used: diameter 5-7 mm, X

Card 1/6

29120


S/020/61/140/005/016/022

B103/B110


Electrical conductivity of ...

σ = up to $10^{-13} \text{ ohm}^{-1} \cdot \text{cm}^{-1}$. It changes with the temperature according to the exponential function $\sigma = \sigma_0 \exp(-E/2kT)$. The results are given in

Table 1. Copper-polychelates of structure I had the highest electrical conductivity. Their special electrical properties are in good agreement with the hypothesis on their network structure. The atoms of monovalent copper form linear bonds: S - Cu - S. X-ray studies showed that the distance between the Cu atoms next to each other -Cu-S-C-S-Cu-equals 5.8 Å. Radicals with π bonds of carbon increase the electrical conductivity of copper polymers. Coplanarity of the polymer chains necessary for the

conjugation of the π bonds of the N-C  atoms and phenylene rings, is due

to the network structure. In polymers with structure II, σ decreases whereas E increases in the sequence Co, Zn, Ni. The four sulfur atoms are

in the same plane as the metal atoms and the N-C  bonds. The Co-S bonds are tetrahedral. The electrical characteristics of 48 semiconductor

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29120
S/020/61/140/005/016/022
B103/B110

Electrical conductivity of ...

polymers like those of inorganic semiconductors, widely depended on the short range order. There are 1 table and 9 references: 8 Soviet and 1 non-Soviet. The reference to English-language publication reads as follows: B. Long, P. Markey, P. G. Wheatley, Acta crystallogr., 7, 140 (1954).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov).
Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: May 31, 1961

Table 1. Electrical conductivity of chelate polymers.

Legend: (1) σ_{295} ($\text{ohm}^{-1} \cdot \text{cm}^{-1}$); (2) same units as (1); (3) in eV; (4) for polychelates: of Ni with $R = -(\text{CH}_2)_6-$ and $n, n'-(\text{C}_6\text{H}_4)_2-$; (5) of zinc; (6) of cobalt; (7) for cadmium polychelates; (8) for all polychelates;

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25320

S/020/61/138/005/020/025
B103/B220

15.8080

AUTHORS: Terent'yev, A. P., Corresponding Member AS USSR,
Mochalina, I. G., and Rukhadze, Ye. G.

TITLE: Polycondensation at the interface

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 5, 1961, 1130-1131

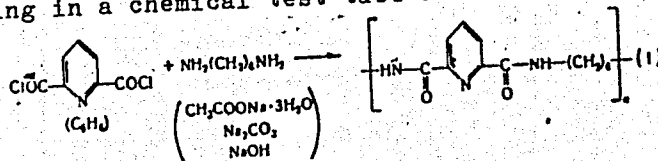
TEXT: The paper deals with the synthesis of polyamide from pyridine-2,6-dicarboxylic acid dichloride and hexamethylene diamine. The authors applied the method of interfacial polycondensation, and studied the properties of the polyamide. The above-mentioned method was suggested by E. L. Wittbecker and P. W. Morgan (Ref. 1: J. Polym. Sci. 40, No. 137, 289 (1959)), and is superior to the existing method of polycondensation in the melt. The most important factors influencing the yield, molecular weight, and viscosity are the nature of the organic solvents and emulsifiers used, the concentration of the reagents, and the stirring of the reaction mixture (R. G. Beaman et al., Ref. 6: J. Polym. Sci. 40, 137, 300 (1959)). The lutin-containing β -picoline fraction (residue obtained in the production of the preparation ftivazid (A. P. Terent'yev

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Polycondensation at the interface

S/020/61/138/005/020/025
B103/B220

et al. Zhurn. Vsesoyzn. khim. obshch. im. D. I. Mendeleeva, 6, No. 1, 116 (1961)) was used as initial substance for synthesis. The synthesis was performed by stirring in a chemical test tube at room temperature



The above-mentioned acid dichloride was obtained by boiling the acid mentioned with thionyl chloride, and then dissolved in benzene. Freshly distilled hexamethylene diamine was dissolved in aqueous solutions of sodium acetate, sodium carbonate, or NaOH. The pH-values at which the polyamide was precipitated, were measured with an MM-5 (LP-5) tube potentiometer and amounted to 3, 7-8, and 10, respectively. If the two solutions were simply poured together, a polymer film formed on the interface, which could be extracted as a fiber with a small glass rod. A polymer precipitate forms in the entire solution while stirring. After filtration and washing with water it was separated as a white powder soluble in pyridine, concentrated formic, hydrochloric, acetic, and

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25320

S/020/61/138/005/020/025
B103/B220

Polycondensation at the interface

sulfuric acids as well as in dimethyl formamide and when heated in m-cresol. The polyamide could be purified only by reprecipitation with ether from pyridine solution. Its intrinsic viscosity was measured in concentrated H_2SO_4 and in dimethyl formamide by means of the Ubbelohde viscosimeter at 20°C and was found to be equal for all 3 pH-values mentioned. It amounted to 0.323 in H_2SO_4 with a polyamide concentration of 0.5 g/100 ml. Its logarithmic viscosity was calculated from the formula:

$$\eta_{log} = \ln \eta_{rel} / C = 0.560.$$

η_{intr} amounted to 0.033-0.202 for concentrations of 0.1-0.3 g/100 ml; η_{log} was 0.522-0.610 for the same concentrations. The average molecular weight was estimated from Huggins' equation to be 20,000-30,000. The thermomechanical curve was measured by Kargin's balance [Abstracter's note: balance not stated]. The infrared spectrum showed the existing N-H and C=O bonds. The N-H frequency is $3352-3378 \text{ cm}^{-1}$, and the C=O frequency 1652 cm^{-1} . Since it contains functional groups which might give chelate nodes with metals, it was allowed to react with metallic salts.

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Polycondensation at the interface²⁵³²⁰

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B103/B220

Polycondensation was repeated in the presence of Fe^{II} salt, and a dark brown, rubber-like, viscous product was separated. There are 2 figures, 1 table, and 13 references: 9 Soviet-bloc and 4 non-Soviet-bloc. Two references to English-language publications are mentioned in the body of the abstract; the third one reads: P. Morgan, S. Kwolek (Ref. 5: J. Polym. Sci., 40, No. 137, 299 (1959)).

SUBMITTED: March 13, 1961

Card 4/4

TERENT'YEV, A.P.; RUKHADZE, Ye.G.; MOCHALINA, I.G.; RODE, V.V.

Synthesis of 2,6-diacetylpyridine. Zhur.VKHO 6 no.1:116-117
'61. (MIRA 14:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Pyridine)

25340

S/020/61/138/006/016/019
B103/B215

15 8150

11.2205

AUTHORS:

Terent'yev, A. P., Corresponding Member AS USSR, Rode, V. V.,
Rukhadze, Ye. G., and Filatov, E. S.

TITLE:

Determination of the molecular weight of chelate polymers

PERIODICAL:

Akademiya nauk SSSR. Doklady, v. 138, no. 6, 1961,
1361-1364

TEXT: The determination of the molecular weights of chelate polymers is difficult since they generally are solid, nonfusible, and insoluble substances (C. S. Marvel, N. Tarköy, Ref.1: J. Am. Chem. Soc., 79,6000 (1957)). V. V. Korshak and assistants (Ref.2: Vysokomolek. soed. 1,1764 (1959), Ref.3: ibid. 2,492 (1960), Ref.4: ibid. 498 (1960), Ref.4, ibid. 662 (1960)) assume that the molecular weight of metal polymers with different bis- β -diketones is not higher than 8000 - 10,000. It is known that chelate polymers contain three kinds of end groups in the molecule:

$ELgn \left[\text{M} \cdots \text{Lgn} \right]_n \text{M} \cdots \text{LgnH} (1)$; $HLgn \left[\text{M} \cdots \text{Lgn} \right]_n \text{M} \cdots \text{A} (2)$; and

$A \left[\text{M} \cdots \text{Lgn} \right]_n \text{M} \cdots \text{A} (3)$, where H is a hydrogen atom, H_2Lgn is a molecule

Card 1/7

25348

S/020/61/138/006/016/019
B103/B215

Determination of the molecular ...

of the ligand containing 4 (and more) donor atoms, M is the ion of a bivalent metal, and A a monovalent anion. According to the conditions of polycondensation, polychelates with different end groups can be produced. An excess of metal salt causes the formation of anion groups at the ends of macromolecules. For case (3), the number of these groups (in %) is

$$A = \left[M_{2A} / M_{pol} \right] 100; M_{pol} = \left[M_{2A} / A \right] 100.$$

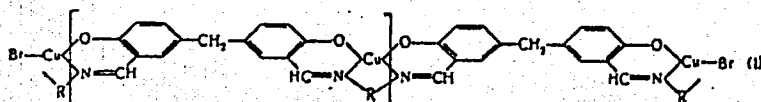
The authors determined the molecular weights of chelate polymers produced formerly:

Card 2/7

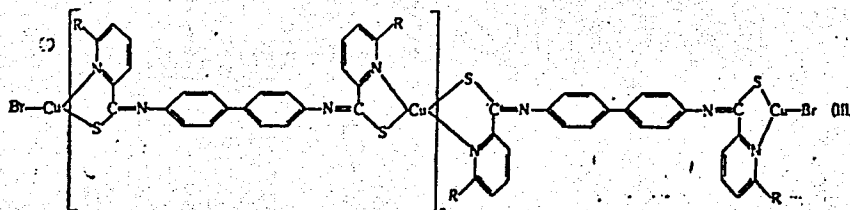
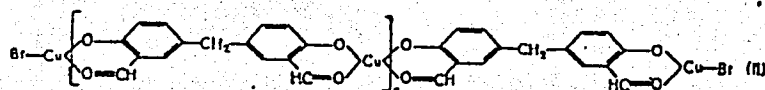
СДЖУ

S/020/61/138/006/016/019
B103/B215

Determination of the molecular ...



где R = 2H —, — (CH₂)₂ —, — (CH₂)₆ — и o-C₆H₄ —



где R = H — и CH₃ —.

дет.

Card 3/7

Determination of the molecular ...

25340
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B103/B215

All these polymers were synthesized with cupric bromide tagged with Br^{82} . Table 1 shows the molecular weights determined, and the polymerization coefficients of the chelate polymers calculated on the basis of Eq. (2). The percentage of the anion (A) was calculated to be the ratio between the portion of the Br^{82} activity in the precipitate and the activity introduced. The molecular weights are 3-4 times higher than those obtained by other scientists. The authors explain the lower molecular weight of (III) by the different stability of the chelate node in the macrochain. In polymer (I) the molecular weight changes according to R. The authors proved this to depend upon the different oxidizabilities of the amines participating in the reaction. The higher the oxidizability of an amine, the faster the rupture of the chain and the lower the molecular weight of the polymer. Since amines also oxidize when left standing in solutions, the molecular weight of a polychelate decreases due to a longer period between the preparation of the solution of an easily oxidizable amine and its application. Such amines in this case were: hexamethylene diamine ((I)R = $-(\text{CH}_2)_6-$) and o-phenylene diamine ((I)R = $\text{o-C}_6\text{H}_4-$). The reaction with a newly prepared solution yielded the highest molecular weights.

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B103/B215

Determination of the molecular ...

When left standing for 3-5 hr, the molecular weight of the polymers was only 50% (in agreement with Ref.1). When left standing for 48 hr and more, low-molecular compounds are formed. With other structures ((I)R = 2H—; (I)R = —(CH₂)₂—) the molecular weights remain constant even after 48 hr.

Polymers (I) may be produced by the method of nascent reagents and also from polymeric Schiff's bases. The average molecular weight is not affected by the method of synthesis. The authors reproduced their methods of determination with a monomer of analogous structure, namely copper salicylal ethylene diamine, to examine whether bromine anions are bound by the polymer surface. The actual molecular weights of polychelates would thus seem to be too low. The authors found that the copper complex, corresponding to theory, in fact does not contain radioactive bromine, i.e., binding did not take place. The method of determining the molecular weights of the above chelate polymers described by the authors yields stable, reproducible results. There are 2 tables and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication is given in the body of the abstract. X

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25340

S/020/61/138/006/016/019
B103/B215

Determination of the molecular ...

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 24, 1961

Card 6/7

TERENT'YEV, A.P.; RODE, V.V.; RUKHADZE, Ye.G.

Studies in the series of chelate polymers. Part 1: Polymers based on 5,5'-methylene-*4*s-salicylaldehyde. Vysokom. soed. 2 no.10:1557-1563 0 '60. (MIRA 13:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Salicylaldehyde) (Chelates)

88541

5.3700

1282, 1153, 1164

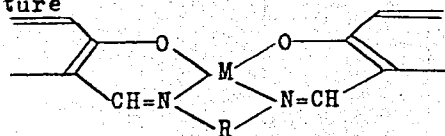
S/190/60/002/010/016/026
B004/B054

AUTHORS: Terent'yev, A. P., Rode, V. V., and Rukhadze, Ye. G.

TITLE: Investigations in the Series of Chelate Polymers. I.
Synthesis of Chelate Polymers on the Basis of 5,5'-Methylene
Bis-salicyl-aldehyde

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10,
pp. 1557-1563

TEXT: The authors report on the synthesis of chelate polymers of the
general structure



R = 2H, $-(CH_2)_2-$, $-(CH_2)_6-$, and $o-C_6H_4-$. Schiff's bases of 5,5'-methylene bis-salicyl-aldehyde and ammonia, ethylene diamine, hexamethylene diamine, and o-phenylene diamine were used as initial substances. A total of 23 chelate compounds were synthesized from the polymers of these Schiff's

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Investigations in the Series of Chelate
Polymers. I. Synthesis of Chelate Polymers
on the Basis of 5,5'-Methylene Bis-salicyl-
aldehyde

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S/190/60/002/010/016/026
B004/B054

bases with salts of Zn^{2+} , Cu^{2+} , Ni^{2+} , Co^{2+} , Fe^{2+} , Cd^{2+} ; the analyses of these compounds are given in a table. In the experimental part in which V. S. Shmarlin cooperated, the authors report on an improvement of the synthesis of 5,5'-methylene bis-salicyl-aldehyde. They obtained a yield of 47-53% from salicyl-aldehyde and formalin, a yield of 65% with α -polyoxymethylene, and a yield of 75% with paraform. The authors describe the syntheses of poly-5,5'-methylene bis-salicylal ethylene diamine, poly-5,5'-methylene bis-salicylal hexamethylene diimine, and poly-5,5'-methylene bis-salicylal-o-phenylene diimine, as well as the synthesis of the chelate polymers. All compounds were synthesized for the first time, except the o-phenylene diimine compound. There are 1 table and 28 references: 12 Soviet, 12 US, 3 German, and 1 Italian. u

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 5, 1960

Card 2/2

5(2)

AUTHORS:

Terent'yev, A. P., Litvin, K. I.,
Rukhadze, Ye. G.

SOV/75-14-3-5/29

TITLE:

The Method of Nascent Reagents (Metod voznikayushchikh reagentov). Communication 2. The Use of Dioxane in the Determination of Calcium and Strontium as Sulfates (Soobshcheniye 2. Primeneniye dioksana pri opredelenii kal'tsiya i strontsiya v vide sul'fatov)

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 3,
pp 288-293 (USSR)

ABSTRACT:

Dioxane forms with metal salts complexes which dissociate slowly. It exhibits at the same time an effect of salting-out. The SO_4^- ion (nascent ion) which is formed by hydrolysis of dimethyl sulfate yields compact precipitates with excess dioxan in weakly acid or neutral solution (Fig). On the basis of this phenomenon a rapid method was devised for the determination of Ca as sulfate-semihydrate or anhydrite. The determination of Ba and Ca in one run is carried out by inhibition of the CaSO_4 -separation by means of glycerin. After

Card 1/2

The Method of Nascent Reagents. Communication 2.

SOV/75-14-3-5/29

The Use of Dioxane in the Determination of Calcium and Strontium as Sulfates

filtering the BaSO_4 -precipitate CaSO_4 is precipitated by addition of dioxane. Further the analysis methods for the determination of Ca in the presence of Al, Fe, NH_4 and HCl are given. So are the directions for the determination of Ca in limestone and clay, and for the determination of strontium. There are 1 figure, 7 tables, and 29 references, 10 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov). Gornyy institut, Moskva (Mining Institute, Moscow)

SUBMITTED: September 21, 1957

Card 2/2

AUTHORS: Kost, A. N., Konnova, Yu. V., SOV/79-29-2-29/71
Yershov, V. V., Rukhadze, Ye. G.

TITLE: Reactions of Hydrazine Derivatives (Reaktsii proizvodnykh
gidrazina). XXII. 3-Amino-1-aryl Pyrazolines and Their
Salicylal Derivatives (XXII. 3-Amino-1-arilpirazoliny i ikh
salitsilal'nyye proizvodnyye)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 2,
pp 498 - 502 (USSR)

ABSTRACT: It was demonstrated that 3-amino-1-phenyl pyrazoline (I),
which was synthesized by the authors already earlier, disposes,
like some other hydrazine derivatives, of a bactericidal
activity, that is to say, it inhibits the growth of the
bacilli of human tuberculosis. For this reason the authors
synthesized according to Duffin and Kendall (Ref 2) several
3-amino-1-phenyl pyrazolines by reaction of α,β -unsaturated
nitriles with aryl hydrazines according to the scheme
mentioned. On the basis of some reactions the affiliation
of the unsaturated nitrile apparently takes place in the
first stage of reaction, while cyclization occurs afterwards.

Card 1/3

Reactions of Hydrazine Derivatives. XXII. 3-Amino-1-aryl SOV/79-29-2-29/71
Pyrazolines and Their Salicylal Derivatives

Only small amounts of unstable aminopyrazolines resulted from the synthesis of Duffin and Kendall (Ref 2), which was carried out strictly according to specifications. Hence it follows that it is more favorable not to carry out the reaction in ethyl alcohol but in the higher boiling butyl alcohol. Accordingly, sodium butylate instead of sodium ethylate was used as catalyst. These modifications of reaction permitted an increase in the yield of aminopyrazolines by 20-40% (50-80% of the theoretical one): 3-amino-1-n-tolyl pyrazoline (VI) was obtained by reaction of β -dimethyl-amino propionitrile with n-tolyl hydrazine. The most intense activity against bacilli was exhibited by 1-phenyl-3-aminopyrazoline (I). The 3-aminopyrazolines synthesized readily enter reaction with salicyl-5-bromo salicyl aldehyde and 2-oxy naphthoic aldehyde under formation of bright-colored salicyl amines. Their absorption spectra are given in the figure. Almost all salicyl aminopyrazolines offer precipitations or a green coloration with salts of trivalent iron; many of them produce characteristic precipitations with the salts

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Reactions of Hydrazine Derivatives. XXII. 3-Amino-1-aryl
Pyrazolines and Their Salicylal Derivatives SOV/79-29-2-29/71

Cu^{+2} , Ni^{+2} , Co^{+2} , Zn^{+2} , Pb^{+2} , Be^{+2} . There are 3 figures
and 6 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State Uni-
versity)

SUBMITTED: December 16, 1957

Card 3/3

TERENT'YEV, A.P.; YANOVSKAYA, L.A.; RUKHADZE, Ye.G., redaktor;
RODIONOV, V.M., akademik, redaktor [deceased]; KAZANSKIY, B.A.,
akademik, redaktor; KNUNYANTS, I.L., akademik, redaktor;
SHEMYAKIN, M.M., redaktor; MEL' NIKOV, N.N., prof, redaktor;
LUR'YE, M.S., tekhnicheskii redaktor.

[Polarographic analysis in organic chemistry] Poliarograficheskii
method v organicheskoi khimii. Moskva, Gos. nauchno - tekhn. izd-
vo khim. lit-ry, 1957. 388 p. (Reaktsii i metody issledovaniia
organicheskikh soedinenii, vol.5) (MIRA 10:10)

1.Chlen-korrespondent AN SSSR (for Shemyakin).
(Polarography) (Chemistry, Organic)

PODGAYSKAYA, Z.I.; RUKHADZE, Ye. G.

Conference on organic analysis. Zhur. anal.khim. 16 no.3:383-
384 My-Je '61. (MIRA 14:6)
(Chemistry, Organic--Congresses)
(Chemistry, Analytical)

RUKHADZE, Ye.G., kand.khim.nauk

Problems in organic analysis. Vest.AN SSSR 31 no.5:121-123 My
'61. (MIRA 14:6)
(Chemistry, Analytical) (Organic compounds—Analysis)

TERENT'YEV, A.P.; MOCHALINA, I.G.; RUKHADZE, Ye.G.

Interfacial polycondensation. Dokl. AN SSSR 138 no.5:1130-1131 Je
'61. (MIRA 14:6)

1. Chlen-korrespondent AN SSSR (for Terent'yev).
(Polyamides)

TERENT'YEV, A.P.; RODE, V.V.; RUKHADZE, Ye.G.; FILATOV, E.S.

Determination of the molecular weight of chelate polymers. Dokl. AN
SSSR 138 no. 6:1361-1364 Je '61. (MIRA 14:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
2. Chlen-korrespondent AN SSSR (for Terent'yev).
(Chelates) (Molecular weights)

RUKHADZE, Ye.Z.

Effect of various substances on the permeability of the intestinal
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